

50  
A  
DRAFTED 10/20/01

CLAIMS

1. Inertial exciter for an acoustic radiator, the exciter comprising:
  - a massive member;
  - a coupler adapted for attachment to the acoustic radiator and adapted for relative movement with respect to the massive member;
  - a motor for effecting said relative movement of the coupler and the massive member; and
  - a suspension for supporting the massive member relative to the coupler;

wherein the suspension acts in a plane generally passing through the centre of mass of the massive member, thereby reducing any moment acting on the suspension.
2. Inertial exciter according to claim 1, wherein said motor is electromagnetic.
3. Inertial exciter according to claim 2, wherein said motor comprises a voice coil assembly and a magnet assembly, and the massive member comprises said magnet assembly.
4. Inertial exciter according to claim 3, wherein the suspension is generally planar.
5. Inertial exciter according to claim 4, wherein the suspension is a spider formed from a corrugated foil of metal.
6. Inertial exciter according to claim 4, wherein the suspension is a spider formed of polymer.

7. Inertial exciter according to claim 4, wherein the suspension is a spider formed of strengthened cloth.

8. Inertial exciter according to claim 4, wherein the suspension is in the form of an arm type cantilever.

9. Inertial exciter according to claim 4, wherein the suspension is co-moulded or moulded integrally with the coupler.

10. Inertial exciter according to claim 8, further comprising a compliant member connected in mechanical series connection between a region of the coupler local to the voice coil assembly and regions of the coupler to which the suspension is attached.

11. Inertial exciter according to claim 10, wherein the compliant member has a lower compliance than the compliance of the suspension.

12. Inertial exciter according to claim 11, further comprising damping to control spurious resonances.

13. Inertial exciter according to claim 4, wherein the magnet assembly comprises a magnet sandwiched between a magnet cup and a pole piece, the cup defining a magnet gap which is filled with retentive fluid of suitable viscosity to damp motion of the voice coil.

14. Inertial exciter according to claim 4, wherein the suspension is attached to the coupler towards the periphery of

the exciter to provide restoring forces to control residual unwanted asymmetric movement.

15. Inertial exciter according to claim 1, wherein the suspension is generally planar.

16. Inertial exciter according to claim 15, wherein the suspension is in the form of an arm type cantilever.

17. Inertial exciter according to claim 16, wherein the motor comprises a voice coil assembly, further comprising a compliant member connected in mechanical series connection between a region of the coupler local to the voice coil assembly and regions of the coupler to which the suspension is attached, the compliant member having a lower compliance than the compliance of the suspension.

18. Inertial exciter according to claim 1, wherein the suspension is attached to the coupler towards the periphery of the exciter to provide restoring forces to control residual unwanted asymmetric movement.

19. Inertial exciter assembly comprising an inertial exciter according to claim 1, a base plate for attachment to an acoustic radiator in a non-repeatedly engageable manner, and an exciter attached to said base plate in a repeatedly engageable manner.

20. Inertial exciter assembly according to claim 19, wherein said exciter is engageable with said base plate via a connection.

21. Inertial exciter assembly according to claim 20, wherein said connection is a threaded connection.

22. Inertial exciter assembly according to claim 20, and including a locking device for locking said connection.

23. Bending wave loudspeaker comprising an acoustic radiator and an inertial exciter according to claim 1, wherein said coupler is attached to the acoustic radiator.

24. Bending wave loudspeaker according to claim 23, wherein said motor is electromagnetic.

25. Bending wave loudspeaker according to claim 24, wherein said motor comprises a voice coil assembly and a magnet assembly, and the massive member comprises said magnet assembly.

26. Bending wave loudspeaker according to claim 25, wherein the suspension is generally planar.

27. Bending wave loudspeaker according to claim 23, wherein said exciter is an inertial exciter.

28. Bending wave loudspeaker according to claim 27, wherein said exciter is engageable with said base plate via a releasable connection.

29. Bending wave loudspeaker according to claim 28, wherein said releasable connection is a threaded connection.

30. Bending wave loudspeaker according to claim 29, further comprising a locking device for locking said threaded connection.

31. A loudspeaker exciter assembly comprising:  
a base plate for attachment to an acoustic radiator in a  
non-repeatedly engageable manner; and  
an exciter attached to said base plate in a repeatedly  
engageable manner.

32. Loudspeaker exciter assembly according to claim 31,  
wherein said exciter is an inertial exciter.

33. Loudspeaker exciter assembly according to claim 31 or  
claim 32, wherein said exciter is engageable with said base  
plate via a releasable connection.

34. Loudspeaker exciter assembly according to claim 33,  
wherein said releasable connection is a threaded connection.

35. Loudspeaker exciter assembly according to claim 34,  
further comprising a locking device for locking said threaded  
connection.

36. Loudspeaker exciter assembly according to claim 33,  
further comprising a locking device for locking said  
releasable connection.

37. Loudspeaker exciter assembly according to claim 31,  
further comprising adhesive for attaching the base plate to an  
acoustic radiator in a non-repeatedly engageable manner.

38. Bending wave loudspeaker comprising an acoustic radiator;  
a base plate for attachment to an acoustic radiator in a  
non-repeatedly engageable manner; and

an exciter attached to said base plate in a repeatedly engageable manner.

39. Bending wave loudspeaker according to claim 38, wherein the base plate is integral with the acoustic radiator.

40. Bending wave loudspeaker according to claim 38, wherein the base plate is adhesively bonded to the acoustic radiator.

41. Loudspeaker exciter assembly according to claim 38, wherein said exciter is an inertial exciter.

42. Loudspeaker exciter assembly according to claim 38 or claim 41, wherein said exciter is engageable with said base plate via a releasable connection.

43. Loudspeaker exciter assembly according to claim 42, wherein said releasable connection is a threaded connection.

44. Loudspeaker exciter assembly according to claim 43, further comprising a locking device for locking said threaded connection.

45. Loudspeaker exciter assembly according to claim 42, further comprising a locking device for locking said releasable connection.